ANALYTICAL REPORT

PREPARED FOR

Attn: Terri Choy AECOM 1001 Bishop Street Honolulu, Hawaii 96813 Generated 1/5/2023 3:10:21 PM

JOB DESCRIPTION

Red Hill - AFFF Assessment Sampling

JOB NUMBER

580-121653-1

Eurofins Seattle 5755 8th Street East Tacoma WA 98424



Eurofins Seattle

Job Notes

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The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northwest, LLC Project Manager.

Authorization

M. Elaine Walker

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Authorized for release by Marie Walker, Senior Project Manager M.Elaine.Walker@et.eurofinsus.com (253)248-4972

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Client: AECOM

Laboratory Job ID: 580-121653-1

Project/Site: Red Hill - AFFF Assessment Sampling

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Case Narrative

Client: AECOM Job ID: 580-121653-1

Project/Site: Red Hill - AFFF Assessment Sampling

Job ID: 580-121653-1

Laboratory: Eurofins Seattle

Narrative

CASE NARRATIVE Client: AECOM

Project: Red Hill - AFFF Assessment Sampling Report Number: 580-121653-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) resulting from a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are an unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes within the calibration range of the instrument or that reduces the interferences thereby enabling the quantification of target analytes.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

Three samples were received on 12/20/2022 10:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.9° C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

GLYCOLS - 2-(2-BUTOXYETHOXY)ETHANOL

Samples AF-RHMW16-WGN01B-2212W2 (580-121653-1), AF-RHMW17D-WGN01B-2212W2 (580-121653-2) and AF-RHMW17D-WGN02B-2212W2 (580-121653-3) were analyzed for glycols in accordance with EPA SW-846 Method 8015B - DAI. The samples were analyzed on 12/31/2022.

Due to a FedEx delay in shipping during the Holiday season, the following samples were delayed several days and were received at the laboratory with less than 2 days remaining on the holding time. As such, the laboratory had insufficient time remaining to perform the analysis within holding time: AF-RHMW16-WGN01B-2212W2 (580-121653-1), AF-RHMW17D-WGN01B-2212W2 (580-121653-2) and AF-RHMW17D-WGN02B-2212W2 (580-121653-3).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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Definitions/Glossary

Client: AECOM Job ID: 580-121653-1

Project/Site: Red Hill - AFFF Assessment Sampling

Qualifiers

Qualifier

GC Semi VOA

Sample was prepped or analyzed beyond the specified holding time

Manual integrated compound. Μ U Undetected at the Limit of Detection.

Qualifier Description

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
n	Listed under the "D" column to designate that the result is reported on a dry weight basis

Listed under the "D" column to designate that the result is reported on a dry weight basis

%R Percent Recovery CFL Contains Free Liquid Colony Forming Unit CFU **CNF** Contains No Free Liquid

Duplicate Error Ratio (normalized absolute difference) **DER**

Dil Fac **Dilution Factor**

Detection Limit (DoD/DOE)

DL, RA, RE, IN Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample

DLC Decision Level Concentration (Radiochemistry)

EDL Estimated Detection Limit (Dioxin) LOD Limit of Detection (DoD/DOE) LOQ Limit of Quantitation (DoD/DOE)

MCL EPA recommended "Maximum Contaminant Level" MDA Minimum Detectable Activity (Radiochemistry) MDC Minimum Detectable Concentration (Radiochemistry)

Method Detection Limit MDL Minimum Level (Dioxin) ML MPN Most Probable Number MQL Method Quantitation Limit

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

NEG Negative / Absent POS Positive / Present

Practical Quantitation Limit PQL

PRES Presumptive **Quality Control** QC

RER Relative Error Ratio (Radiochemistry)

Reporting Limit or Requested Limit (Radiochemistry) RL

RPD Relative Percent Difference, a measure of the relative difference between two points

Toxicity Equivalent Factor (Dioxin) **TEF TEQ** Toxicity Equivalent Quotient (Dioxin)

TNTC Too Numerous To Count

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1/5/2023

Client Sample Results

Client: AECOM Job ID: 580-121653-1

Project/Site: Red Hill - AFFF Assessment Sampling

Client Sample ID: AF-RHMW16-WGN01B-2212W2 Lab Sample ID: 580-121653-1

Date Collected: 12/16/22 18:40 Matrix: Water

Date Received: 12/20/22 10:45

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2-(2-Butoxvethoxv)ethanol	3.0	UMH	5.0	1.1	ma/L			12/31/22 18:30	

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Client Sample Results

Client: AECOM Job ID: 580-121653-1

Project/Site: Red Hill - AFFF Assessment Sampling

Client Sample ID: AF-RHMW17D-WGN01B-2212W2 Lab Sample ID: 580-121653-2

Date Collected: 12/16/22 11:05

Matrix: Water

Date Received: 12/20/22 10:45

	Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
ı	2-(2-Butoxyethoxy)ethanol	3.0	U H	5.0	1.1	ma/L			12/31/22 18:53	1

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Client Sample Results

Client: AECOM Job ID: 580-121653-1

Project/Site: Red Hill - AFFF Assessment Sampling

Client Sample ID: AF-RHMW17D-WGN02B-2212W2 Lab Sample ID: 580-121653-3

Date Collected: 12/16/22 13:35

Matrix: Water

Date Received: 12/20/22 10:45

Method: SW846 8015C GLY - Glycols- Direct Injection (GC/FID)

Analyte	Result Qualifier	LOQ	DL Unit	D	Prepared	Analyzed	Dil Fac
2-(2-Butoxyethoxy)ethanol	30 UH	5.0	1.1 mg/l			12/31/22 19:16	1

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QC Sample Results

Client: AECOM Job ID: 580-121653-1

Project/Site: Red Hill - AFFF Assessment Sampling

Method: 8015C GLY - Glycols- Direct Injection (GC/FID)

Lab Sample ID: MB 680-757531/16 **Client Sample ID: Method Blank Prep Type: Total/NA**

Matrix: Water

Analysis Batch: 757531

	MB	MB							
Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2-(2-Butoxyethoxy)ethanol	3.0	U	5.0	1.1	mg/L			12/31/22 18:08	1

Lab Sample ID: LCS 680-757531/12 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

Analysis Batch: 757531

-	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
2-(2-Butoxyethoxy)ethanol	20.0	20.7		mg/L		104	50 - 150	

Lab Sample ID: LCSD 680-757531/13 **Client Sample ID: Lab Control Sample Dup** Prep Type: Total/NA

Matrix: Water

Analysis Batch: 757531

Alialysis Dalcii. 131331									
	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
2-(2-Butoxyethoxy)ethanol	20.0	21.6		mg/L		108	50 - 150	4	50

1/5/2023

Lab Chronicle

Client: AECOM Job ID: 580-121653-1

Project/Site: Red Hill - AFFF Assessment Sampling

Client Sample ID: AF-RHMW16-WGN01B-2212W2

Lab Sample ID: 580-121653-1 Date Collected: 12/16/22 18:40

Matrix: Water

Date Received: 12/20/22 10:45

Batch Dilution Batch **Batch** Prepared Method Number Analyst or Analyzed **Prep Type** Type Run **Factor** Lab 12/31/22 18:30 Total/NA Analysis 8015C GLY 757531 JCK EET SAV

Client Sample ID: AF-RHMW17D-WGN01B-2212W2 Lab Sample ID: 580-121653-2

Date Collected: 12/16/22 11:05 **Matrix: Water**

Date Received: 12/20/22 10:45

Batch **Batch** Dilution Batch Prepared **Prep Type** Type Method Run Factor Number Analyst Lab or Analyzed Total/NA Analysis 8015C GLY 757531 JCK EET SAV 12/31/22 18:53

Client Sample ID: AF-RHMW17D-WGN02B-2212W2 Lab Sample ID: 580-121653-3

Date Collected: 12/16/22 13:35 **Matrix: Water**

Date Received: 12/20/22 10:45

Batch **Batch** Dilution Batch **Prepared** Method or Analyzed **Prep Type** Type **Factor Number Analyst** Run Lab 12/31/22 19:16 Total/NA Analysis 8015C GLY 757531 JCK **EET SAV**

Laboratory References:

EET SAV = Eurofins Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Accreditation/Certification Summary

Client: AECOM Job ID: 580-121653-1

Project/Site: Red Hill - AFFF Assessment Sampling

Laboratory: Eurofins Savannah

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Pr	rogram	Identification Number	Expiration Date		
ANAB		Dept. of Defense ELAP L2463		09-22-24		
The following englyte	والمراجع المراجع المرا					
the agency does not		ort, but the laboratory is not o	certified by the governing authority.	This list may include analytes for whic		
,		ort, but the laboratory is not o	certified by the governing authority. Analyte	This list may include analytes for whic		

Eurofins Seattle

Sample Summary

Client: AECOM Job ID: 580-121653-1

Project/Site: Red Hill - AFFF Assessment Sampling

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-121653-1	AF-RHMW16-WGN01B-2212W2	Water	12/16/22 18:40	12/20/22 10:45
580-121653-2	AF-RHMW17D-WGN01B-2212W2	Water	12/16/22 11:05	12/20/22 10:45
580-121653-3	AF-RHMW17D-WGN02B-2212W2	Water	12/16/22 13:35	12/20/22 10:45

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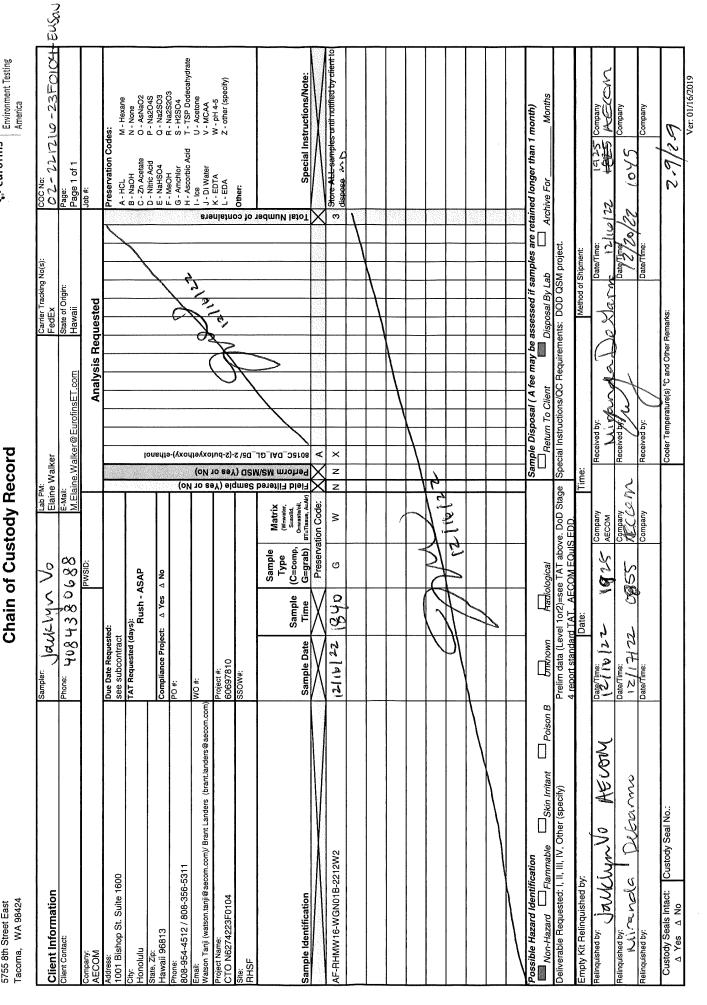
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Eurofins 1 Septit 23



Environment Testing

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Eurofins FGS, Seattle

5755 8th Street East

								,			14000	
Client Information	Sampler:	Sn Vo		Lab PM: Elaine	Lab PM: Elaine Walker			FedEx	Camer I racking No(s): FedEx		01-221216-23F0104-EUSav	:0104-EUSav
	Phone:	0007	3		1747	E-Mail:	200	State of Origin:	rigin:		Page:	
	40%-1	02140810	200		e.Walker	@ EurotinsE	T.com	Намаіі			Page 1 of 1	
Company: AECOM			WSID:			1	Analysis	Analysis Requested				
hop St. Suite 1600	Due Date Requested: see subcontract									_	Preservation Codes	odes: M - Hexane
	TAT Requested (day	s): Rush - ASAP	AP								B - NaOH C - Zn Acetate	N - None O - AsNaO2 P - Na2O4S
State, Zip: Hawaii 96813	Compliance Project:	Δ Yes Δ No	No		lonariti				\leq		E - NaHSO4 F - MeOH	Q - Na2SO3 R - Na2S2O3
Phone: 808-954-4512 / 808-356-5311	PO #:			(OI)				3			G - Amchlor H - Ascorbic Acid	
om)/ Brant Landers (brant.landers@aecom.com)	WO #:			10 00	(on			Ş		- DLG		
	Project #: 60697810			, o	10 29 Y		3			alstao	CHILD TO SERVICE	v - pri 4-5 Z - other (specify)
	SSOW#:			we2) asv						Other:	
Sample Identification	Sample Date	Sample (Time	Sample Type (C=comp,	Matrix 90 (W=water, IL S=solid, O=waste/oli, 00 BT=TIssue, A=Atr) IL.	Periorm MS/I 8015C_DAI_GL	\				edmuN lstoT		Special Instructions/Note:
	\\	17		on Code:	۲ X							
AF-RHMW17D-WGN01B-2212W2	12/16/22	1105	5	3	z					3		
AF-RHMW17D-WGN02B-2212W2	12/16/22	1335	ŋ	×	× z					8		
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A CANADA AND A CAN							\dashv					
0.11	1									4(3335)		
and aw												
										5 (1404)		
										361-34		
Possible Hazard Identification Non-Hazard	Umshown	Hadiological	qical		Sample	Disposal (eturn To Cl	A fee ma	r be assesser Disposal	d if sampl By Lab	es are reta	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) Return To Client Archive For Mon	1 1 month) Months
Other (specify)	Prelim (tata (Level 1or2)=see TAT above. Dol	TAT above	e. DoD Stage		Instructions	/QC Requi	Special Instructions/QC Requirements: DOD QSM project.	D QSM pro	ject.		
Empty Kit Relinquished by:	4 report startidat	Date:			Time:			Met	Method of Shipment:	ent:		
るい。作る	Date/Time:	<u>e</u>	8	Company AECOM	Rece	Received by:	a D	etarmo	Date/Time	Time: 110/22	Sal -	
Defector	Date/Time: 12/(7/22	80	0858	Company PECON	Rec	Received by			Date/Tim	192/	5/01 22	Company
	Date/Time:			Company		Received by:			Date/Time	rime: /		Company
Custody Seals Intact: Custody Seal No.: A Yes A No					Cool	Cooler Tempe la fure(s) °C and Other Remarks:	s(s) °C and O	her Remarks:		2	6-2/6	
											nu-	Ver: 01/16/2019

& eurofins Environment Testing America

Chain of Custody Record

Eurofins FGS, Seattle 5755 8th Street East Tacoma, WA 98424

Client: AECOM Job Number: 580-121653-1

List Source: Eurofins Savannah
List Number: 2
List Creation: 12/29/22 01:27 PM

Creator: Harley, Tynisha

HTs)

MS/MSDs

<6mm (1/4").

Sample containers have legible labels.

Sample collection date/times are provided.

Appropriate sample containers are used.

Containers are not broken or leaking.

Sample bottles are completely filled. Sample Preservation Verified.

Multiphasic samples are not present.

Residual Chlorine Checked.

Samples do not require splitting or compositing.

There are no discrepancies between the containers received and the COC.

Samples are received within Holding Time (excluding tests with immediate

There is sufficient vol. for all requested analyses, incl. any requested

Containers requiring zero headspace have no headspace or bubble is

,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	

True

True

True

True

True

True True

N/A

True

N/A

True

True

N/A